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EXAMINER	
SINGH, DALZID E	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/717,265	KIM ET AL.	
	Examiner	**Art Unit**	
	Dalzid Singh	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grandpierre et al (US Patent No. 6,816,684) in view of Hoshida (US Pub. No. 2004/0223769).

Regarding claim 1, Grandpierre et al disclose an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

an optical coupler (OC) for performing a coupling operation for an input optical signal;

a photodetector (PID2) for converting said input optical signal into an electrical signal;

a clock decision recovery (CR) unit for detecting a clock from the electrical signal from said PID2 and recovering data output as a recovered data signal on the basis of the detected clock; and

a monitoring unit (PID1 and AMP) for converting an output optical signal from said optical coupler into an electrical signal, amplifying/inverting the electrical signal to

a predetermined level, synthesizing the converted amplified/inverted signal (PD and PHC synthesizes the electrical signal) with a recovered data signal by said CR unit.

Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Regarding claim 2, Grandpierre et al disclose an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

an optical coupler (OC) for performing a coupling operation for an input optical signal;

a photodetector (PID2) for converting said input optical signal into an electrical (CR) unit for detecting a clock from the electrical signal from said PID2 and recovering data on the basis of the detected clock; and

monitoring unit (PID1 and AMP) for converting an output optical signal from said optical coupler into an electrical signal, subtracting the converted signal from a recovered data signal by said CDR unit,;

wherein said monitoring unit includes:

a second PID1 for receiving an output optical signal from said optical coupler and converting the received optical signal into an electrical signal;

an inverting amplifier (AMP) for amplifying the electrical signal from said second PD to said predetermined level and inverting the amplified signal; and,

an adder (PD and PHC) for adding the amplified/inverted signal from said inverting amplifier to said recovered data signal from said CDR unit to obtain said difference signal.

Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of

Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Regarding claims 3, 8, 13 and 18, the combination differs from the claimed invention in that the combination does not disclose a processor, communicatively connected to the radio-frequency power detector, having a display screen for notifying a user of said error value. However, it would have been obvious that there exist a processor to evaluate the error signal and display for displaying the result in order to notify operator of the signal condition.

Regarding claims 4, 9, 14 and 19, the combination differs from the claimed invention in that the combination does not disclose a processor, communicatively connected to the radio-frequency power detector, having storage for logging said error value. However, it would have been obvious that there exist a processor to evaluate the error signal and store such error in order to evaluate the error at later time.

Regarding claims 5, 10, 15 and 20, further comprising a processor, communicatively connected to the radio-frequency power detector, configured for determining a source of said error value (it would have been obvious that the source of error is determined).

Regarding claims 6, Grandpierre et al disclose an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

a PD (PID2) for converting an input optical signal into an electrical signal;

a CDR (CR) unit for detecting a clock from the electrical signal from said PD and recovering data on the basis of the detected clock; and

a monitoring unit including an inverting amplifier (AMP) for inverting/amplifying the electrical signal to a predetermined level, and for synthesizing the inverted/amplified signal with a recovered data signal from said CDR unit to obtain a difference between said inverted/amplified signal and said recovered data signal.

Grandpierre et al disclose two photodetectors and do not disclose one PD shared by the monitoring and CR circuit. However, it would have been obvious or it would have been a matter of design choice to an artisan of ordinary skill in the art at the time the invention was made to provide only one photodetector.

Furthermore, Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Regarding claim 7, Grandpierre et al disclose an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

a PD (PID2) for converting an input optical signal into an electrical signal;

a CDR unit (CR) for detecting a clock from the electrical signal from said PD and recovering data on the basis of the detected clock; and

monitoring unit (PD and PHC) for inverting/amplifying the electrical signal, synthesizing the inverted/amplified signal with a recovered data signal from said CDR unit to obtain a difference between said inverted/amplified signal and said recovered data signal;

wherein said monitoring unit includes:

an inverting amplifier (AMP) for amplifying the electrical signal PD to said predetermined level and inverting the amplified signal; and

an adder (PHC) for adding the amplified/inverted signal from said inverting amplifier to said recovered data signal from said CDR unit to obtain said difference signal.

Grandpierre et al disclose two photodetectors and do not disclose one PD shared by the monitoring and CR circuit. However, it would have been obvious or it would have been a matter of design choice to an artisan of ordinary skill in the art at the time the invention was made to provide only one photodetector.

Furthermore, Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do

not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Regarding claim 11, an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

an optical coupler (OC) for performing a coupling operation for an input optical signal;

a PD (PID2) for converting said input optical signal into an electrical signal;

a CDR unit (CR) for detecting a clock from the electrical signal from said PD and recovering data on the basis of the detected clock; and

a monitoring unit (PD and PHC) for converting an output optical signal from said optical coupler into an electrical signal, said monitoring unit including an inverting amplifier (AMP) for inverting/amplifying the converted electrical signal to a predetermined level, and a recovered data signal from said CDR unit, synthesizing the filtered results to obtain a difference between the filtered inverted/amplified signal.

Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Furthermore, the combination discloses one filter and does not teach the use of two filtering elements. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide additional filtering elements to remove unwanted noise.

Regarding claim 12, Grandpierre et al disclose an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

an optical coupler (OC) for performing a coupling operation for an input optical signal;

a PD (PID2) for converting said input optical signal into an electrical signal;

a CDR unit (CR) for detecting a clock from the electrical signal from said PD and recovering data on the basis of the detected clock; and

monitoring unit for converting an output optical signal from said optical coupler into an electrical signal, inverting/amplifying (AMP) the converted electrical signal to a predetermined level and a recovered data signal from said CDR unit, respectively, synthesizing the results to obtain a difference between the filtered inverted/amplified signal and the filtered recovered data signal.

Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Furthermore, the combination discloses one filter and does not teach the use of two filtering elements. However, it would have been obvious to an artisan of ordinary

skill in the art at the time the invention was made to provide additional filtering elements to remove unwanted noise.

Regarding claim 16, Grandpierre et al disclose an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

an optical coupler (OC) for performing a coupling operation for an input optical signal;

a photodetector (PID2) for converting said input optical signal into an electrical signal;

a clock decision recovery (CR) unit for detecting a clock from the electrical signal from said PID2 and recovering data output as a recovered data signal on the basis of the detected clock; and

a monitoring unit (PID1 and AMP) for converting an output optical signal from said optical coupler into an electrical signal, amplifying/inverting the electrical signal to a predetermined level, synthesizing the converted amplified/inverted signal (PD and PHC synthesizes the electrical signal) with a recovered data signal by said CR unit.

Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an

artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Furthermore, the combination discloses one filter and does not teach the use of two filtering elements. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide additional filtering elements to remove unwanted noise.

Regarding claim 17, Grandpierre et al disclose an optical signal quality monitoring apparatus, as shown in Fig. 1, comprising:

an optical coupler (OC) for performing a coupling operation for an input optical signal;

a photodetector (PID2) for converting said input optical signal into an electrical (CR) unit for detecting a clock from the electrical signal from said PID2 and recovering data on the basis of the detected clock; and

monitoring unit (PID1 and AMP) for converting an output optical signal from said optical coupler into an electrical signal, subtracting the converted signal from a recovered data signal by said CDR unit,;

wherein said monitoring unit includes:

a second PID1 for receiving an output optical signal from said optical coupler and converting the received optical signal into an electrical signal;

an inverting amplifier (AMP) for amplifying the electrical signal from said second PD to said predetermined level and inverting the amplified signal; and,

an adder (PD and PHC) for adding the amplified/inverted signal from said inverting amplifier to said recovered data signal from said CDR unit to obtain said difference signal.

Grandpierre et al disclose processing circuit (DC) for receiving and processing the signal and differ from the claimed invention in that Grandpierre et al do not specifically disclose band pass filtering the resulting difference signal, and measuring radio-frequency power from the filtered result, said radio-frequency power being an error value of said input optical signal. Hoshida teaches receiving the signal, filtering and detect radio frequency power (see Fig. 3). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide RF power detector as taught by Hoshida to the system of Grandpierre et al. For example, the filter and RF power detector of Hoshida could be coupled to the output of (DC) of Grandpierre et al. One of ordinary skill in the art would have been motivated to do such in order to detect power level of signal frequency.

Furthermore, the combination discloses one filter and does not teach the use of two filtering elements. However, it would have been obvious to an artisan of ordinary

skill in the art at the time the invention was made to provide additional filtering elements to remove unwanted noise.

Response to Arguments

3. Applicant's arguments filed 20 March 2008 have been fully considered but they are not persuasive.

On page 11 of the remark, applicant indicates that "Grandpierre is completely silent with regard to using radio-frequency power, and is also silent with regard to using an error value. In addition, in Hoshida the receiving of the signal, filtering and the detected radio-frequency power is not an error value of the input optical signal. Hoshida discloses the RF power allows an analysis of optical signal to noise ratio (OSNR) and waveform distortion (page 3, paragraphs [0030 and 0038]). Thus, the combination of Grandpierre and Hoshida does not disclose, teach, suggest, or otherwise render obvious a monitoring unit as recited in the present claim."

The optical signal to noise ratio (OSNR) as disclosed by Hoshida represent error value. As optical signal travels on transmission medium, the optical signal waveforms distorts due to accumulated noise and hence quality of signal degrades. One way to measure signal quality is by obtaining the signal to noise ratio. Since the signal comprises noise, this noise is a source of error. Therefore, the ratio of signal to noise is considered as an error value.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dalzid Singh/
Primary Examiner
Art Unit 2613